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10/561,514	12/20/2005	Kazuhiko Sugiyama	SUGI0158	6391

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EXAMINER

MURPHY, KEVIN

ART UNIT	PAPER NUMBER
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3753

NOTIFICATION DATE	DELIVERY MODE
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11/18/2011

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/561,514	Applicant(s) SUGIYAMA ET AL.	
	Examiner KEVIN MURPHY	Art Unit 3753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 August 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 1-18 is/are pending in the application.
- 5a) Of the above claim(s) 6-9 and 16-18 is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 1-5 and 10-15 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☒ The drawing(s) filed on 20 December 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/8/2011, 3/27/2006</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I, drawn to a device for supplying gas in the reply filed on 8/08/2011 is acknowledged. The traversal is on the ground(s) that Wilmer in view of Matsuse does not disclose all of the special technical features between the two groups. This is not found persuasive. Specifically, applicant argues that Wilmer does not disclose dividing and supplying gas from the same gas supply source to chambers with certain flow rates Q_1 and Q_2 and at a specified flow rate ratio Q_1/Q_2 . However, the claims do not recite that the dividing and supplying gas must be from the same gas supply source. Additionally, the gas supplied to the outlets of Wilmer is inherently provided at some flow rate ratio Q_1/Q_2 . Applicant further argues that Wilmer does not disclose a pressure type division quantity controller because valves 580a and 580b cannot be seen as a pressure type division quantity controller. However, the claims do not recite that the pressure type division quantity controller must comprise a single control valve and a driving control part for regulating the degree of opening the control valve as argued by applicant. Applicant further argues that it would not have been obvious to one of ordinary skill in the art to combine the teachings of Wilmer with the teachings of Matsuse to provide the shower heads of Matsuse on the ends of the supply lines of Wilmer. However, it is seen that it would have been obvious to one of ordinary skill in the art to provide the shower heads of Matsuse on the ends of the supply lines of Wilmer for the purpose of providing an even distribution of gas in the process chamber as specifically taught by Matsuse (col. 6, lines 50-59).

The requirement is still deemed proper and is therefore made FINAL.

Therefore, claims 1-18 remain pending with claims 6-9 and 16-18 withdrawn from consideration.

Information Disclosure Statement

In addition to the two 1449's attached to this office action, two additional information disclosure statements were filed by applicant (filed 3/27/2006 and 3/28/2006, respectively). These additional information disclosure statements are not attached because they provide identical lists of four Japanese patent documents, each of which are cited on the information disclosure statement filed 3/27/2006 (containing a total of six Japanese patent documents). All of the duplicate cited references on the additional information disclosure statements have been considered as indicated on the attached 1449.

The two Japanese patent documents cited on the information disclosure statement filed 8/08/2011 have been lined through because they have been previously cited on the information disclosure statement filed 3/27/2006. These duplicate references have been considered as indicated on the attached 1449.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the first open/close valve and the second open/close valve made to be integrated (claims 4, 11 and 12) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. **Claims 5 and 13-15** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Claims 5 and 13-15 all recite “wherein a pressure type flow controller FCS is used for a flow controller QCS. However, it is unclear whether applicant intends to refer

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to the previously recited flow controller (recited in claim 1) or whether applicant intends to recite an additional flow controller. Additionally, it is unclear whether the terms 'FCS' and 'QCS' provide any additional limitations to the flow controllers. These terms have not been given any special definitions in applicant's specification.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. **Claims 1, 2, 4 and 11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilmer (US Patent 5865205) in view of Matsuse et al. (US Patent 5951772).

9. Regarding Claim 1, Wilmer discloses a device for supplying gas (Figure 4) while dividing to a chamber (chamber connected to **566a**, **566b**) from a gas supply facility **590**

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equipped with a flow controller **592**, comprising a device capable of supplying a specified quantity of gas (the recitation “for supplying a specified quantity of gas” is seen as an intended use of the device only), while dividing at a specified flow rate ratio $Q1/Q2$ (Wilmer discloses that a gas flow may be delivered to one gas flow channel **570** or **572** while the same gas is being delivered to another gas flow channel; these gas flows are inherently provided at some desired flow rate ratio $Q1/Q2$ as provided by control valves **556a**, **556b** as described in col. 12, lines 33-62) from a gas supply facility **590** provided with a flow controller **592**, into a chamber (chamber connected to **566a**, **566b**) through a plurality of branch supply lines including a first branch supply line **570** and a second branch supply line **572**; a first open/close valve **555a** (leading from reservoir **550** to first branch **570**) and a second open/close valve **580b** (leading to second branch **572**) are installed on the first branch supply line **570** and the second branch supply line **572**, respectively; a first bypass line (line including valve **582a**) is disposed on a downstream side of the first open/close valve **555a** and branched from the first branch supply line **570**; a second bypass line (line including valve **582b**) is disposed on a downstream side of the second open/close valve **580b** and branched from the second branch supply line **572**; a pressure type division quantity controller (including valve **556a** controlled by actuator **557a**) is connected to the first bypass line and the second bypass line (lines including valves **582a** and **582b**, respectively; it is seen that valve **556a** is connected to each of these bypass lines as the claim does not positively require the pressure type division quantity controller to be positioned within each bypass line); a first pressure sensor **558a** is disposed to measure

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pressure inside the first branch supply line **570**; and a second pressure sensor **558b** is disposed to measure pressure inside the second branch supply line **572**, wherein Q1 and Q2 are specified quantities of gas supplied to the first branch supply line and the second branch supply line, respectively (gas is supplied from common source **590** to each branch line **570**, **572** in the ratio Q1/Q2). Wilmer does not disclose shower plates fixed to ends of the first branch supply line and the second branch supply line. Matsuse teaches (Figure 1) a device for supplying gas and further teaches shower plates **10** fixed to the ends of first and second supply lines **10A**. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the shower plates taught by Matsuse on the ends of the first and second supply lines disclosed by Wilmer for the purpose of providing an even distribution of the gas in the process chamber. As described above, valve **556a** is seen as a pressure type division quantity controller as the valve is operated in response to sensed pressure signals (col. 11, lines 3-23) and is proportionally adjusted, thereby providing proportionally controlled pressure changes across the valve.

10. Regarding Claim 2, Wilmer in view of Matsuse further discloses a control device **508a** is disposed to regulate a degree of opening of the pressure type division quantity controller **556a** to reduce a difference between actual pressure of a branch supply line and set pressure (this is achieved by the servo control of **508a** as described in col. 11, lines 3-23) to reach the specified flow rate ratio Q1/Q2 by comparing either one of a first set pressure or a second set pressure (such as the first set pressure or 'calibrated desired flow input signal' **506a**), respectively, of the first branch supply line and the

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second branch supply line to reach the specified flow rate ratio $Q1/Q2$ with corresponding first actual pressure (measured flow signal **530a**) or second actual pressure of the first branch supply line and the second branch supply line measured by the first pressure sensor **558a** or the second pressure sensor. Although Wilmer discloses using the pressure signals and converting the pressures to flow rates for comparison, Wilmer is seen as comparing 'scaled' pressure signals which have been mathematically converted to flow rates using known parameters.

11. Regarding Claims 4 and 11, Wilmer in view of Matsuse is seen as further disclosing the first open/close valve **555a** and the second open/close valve **580b** are made to be integrated (these valves are seen as integrated as they are both part of the system disclosed by Wilmer). Alternatively, it has been generally held that making two components into one integral component is within the level of ordinary skill in the art (MPEP 2144.04). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made the two valves in one integrated valve housing.

12. **Claims 2 and 11** are alternatively rejected under 35 U.S.C. 103(a) as being unpatentable over Wilmer (US Patent 5865205) in view of Matsuse et al. (US Patent 5951772) as applied to claim 1 above, and further in view of Moslehi et al. (US Patent 5453124).

13. Regarding Claim 2, Wilmer in view of Matsuse is seen as disclosing all of the elements of claim 2 as described above. Alternatively, in the event Wilmer is not seen as comparing the measured pressure signal with a set pressure signal, Moslehi teaches a semiconductor processing chamber and further teaches comparing a measured

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pressure signal (signal **90**) with a set pressure signal **94** and actuating valve **98** to produce the desired pressure. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the valve **98** and servo control system taught by Moslehi in the device of Wilmer for the purpose of ensuring that the gas is supplied at the desired pressure into the chamber.

14. Regarding Claim 11, Wilmer is seen as further disclosing the first open/close valve **555a** and the second open/close valve **580b** are made to be integrated (these valves are seen as integrated as they are both part of the system disclosed by Wilmer). Alternatively, it has been generally held that making two components into one integral component is within the level of ordinary skill in the art (MPEP 2144.04). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made the two valves in one integrated valve housing.

15. **Claims 3, 10 and 12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilmer (US Patent 5865205) in view of Matsuse et al. (US Patent 5951772) as applied to claim 1 above, and further in view of Girard et al. (US Patent Application 2002/0170598).

16. Regarding Claim 3, Wilmer in view of Matsuse does not disclose the first open/close valve and the second open/close valve are pneumatically operated, and a switch valve is disposed to supply actuating air to the first open/close valve and the second open/close valve. Girard teaches a system for manufacturing semiconductors and further teaches valves **SVa** and **SVb** are pneumatically actuated (para. 0045). It would have been obvious to one of ordinary skill in the art at the time the invention was

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made to actuate the first and second open/close valves of Wilmer pneumatically as taught by Girard for the purpose of providing a well known actuation means which is able to be quickly and easily controlled. Therefore, the modified structure described above is seen to inherently include a switch valve as there must be a valve provided for controlling the delivery of pneumatic fluid to the actuators.

17. Regarding Claim 10, Wilmer does not disclose the first open/close valve and the second open/close valve are pneumatically operated, and a switch valve is disposed to supply actuating air to the first open/close valve and the second open/close valve.

Girard teaches a system for manufacturing semiconductors and further teaches valves **SVa** and **SVb** are pneumatically actuated (para. 0045). It would have been obvious to one of ordinary skill in the art at the time the invention was made to actuate the first and second open/close valves of Wilmer pneumatically as taught by Girard for the purpose of providing a well known actuation means which is able to be quickly and easily controlled. Therefore, the modified structure described above is seen to inherently include a switch valve as there must be a valve provided for controlling the delivery of pneumatic fluid to the actuators.

18. Regarding Claim 12, Wilmer is seen as further disclosing the first open/close valve **555a** and the second open/close valve **580b** are made to be integrated (these valves are seen as integrated as they are both part of the system disclosed by Wilmer). Alternatively, it has been generally held that making two components into one integral component is within the level of ordinary skill in the art (MPEP 2144.04). Therefore, it

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would have been obvious to one of ordinary skill in the art at the time the invention was made the two valves in one integrated valve housing.

19. **Claims 5, 13 and 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilmer (US Patent 5865205) in view of Matsuse et al. (US Patent 5951772) as applied to claims 1, 2 or 4 above, and further in view of Nishino et al. (US Patent 5669408).

20. Regarding Claims 5, 13 and 15, Wilmer does not disclose a pressure type flow controller FCS is used for a flow controller QCS. Nishino teaches a device for controlling gas flow in semiconductor manufacturing processes and further teaches a pressure type flow controller (including elements **2**, **14** and **6**). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Wilmer to include the pressure type flow controller of Nishino in the gas supply for the purpose of ensuring the desired flow rate is achieved.

21. **Claim 10** is alternatively rejected under 35 U.S.C. 103(a) as being unpatentable over Wilmer (US Patent 5865205) in view of Matsuse et al. (US Patent 5951772) and further in view of Moslehi et al. (US Patent 5453124) as applied to claim 2 above, and further in view of Girard et al. (US Patent Application 2002/0170598).

22. Regarding Claim 10, Wilmer does not disclose the first open/close valve and the second open/close valve are pneumatically operated, and a switch valve is disposed to supply actuating air to the first open/close valve and the second open/close valve.

Girard teaches a system for manufacturing semiconductors and further teaches valves **SVa** and **SVb** are pneumatically actuated (para. 0045). It would have been obvious to

one of ordinary skill in the art at the time the invention was made to actuate the first and second open/close valves of Wilmer pneumatically as taught by Girard for the purpose of providing a well known actuation means which is able to be quickly and easily controlled. Therefore, the modified structure described above is seen to inherently include a switch valve as there must be a valve provided for controlling the delivery of pneumatic fluid to the actuators.

23. **Claim 13** is alternatively rejected under 35 U.S.C. 103(a) as being unpatentable over Wilmer (US Patent 5865205) in view of Matsuse et al. (US Patent 5951772) and further in view of Moslehi et al. (US Patent 5453124) as applied to claim 2 above, and further in view of Nishino et al. (US Patent 5669408).

24. Regarding Claim 13, Wilmer does not disclose a pressure type flow controller FCS is used for a flow controller QCS. Nishino teaches a device for controlling gas flow in semiconductor manufacturing processes and further teaches a pressure type flow controller (including elements **2**, **14** and **6**). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Wilmer to include the pressure type flow controller of Nishino in the gas supply for the purpose of ensuring the desired flow rate is achieved.

25. **Claim 14** is rejected under 35 U.S.C. 103(a) as being unpatentable over Wilmer (US Patent 5865205) in view of Matsuse et al. (US Patent 5951772) and further in view of Girard et al. (US Patent Application 2002/0170598) as applied to claim 3 above, and further in view of Nishino et al. (US Patent 5669408).

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26. Regarding Claim 14, Wilmer does not disclose a pressure type flow controller FCS is used for a flow controller QCS. Nishino teaches a device for controlling gas flow in semiconductor manufacturing processes and further teaches a pressure type flow controller (including elements **2**, **14** and **6**). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Wilmer to include the pressure type flow controller of Nishino in the gas supply for the purpose of ensuring the desired flow rate is achieved.

Conclusion

27. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KEVIN MURPHY whose telephone number is (571)270-5243. The examiner can normally be reached on Monday-Friday 7:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Hepperle can be reached on 571-272-4913. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/John Rivell/
Primary Examiner, Art Unit 3753

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11/09/2011